Notebook Series -- Pocket Notebooks
Notebook, PN-15-07-22

The dated entries in this pocket notebook cover the period August 1915-January 1916. The book was used by Edison to record ideas about business matters, experiments to be tried, and other tasks to be performed. Some of the entries have been crossed out. Others appear to be clean transcriptions of entries from PN-15-07-27. Many of the experimental notes pertain to chemicals. Also included are notes on battery cell regeneration, disc records, and recording experiments with various arrangements of musicians, instruments, and funnels. Notations regarding a request for a revolver without rifling and for information on submarines, along with references to Adm. Joseph Strauss of the U.S. Navy, indicate the beginning of Edison's work on war-related experiments.

Among the business-related entries are notes on daily output at the benzol plants in Johnstown, Pennsylvania, and Woodward, Alabama. Also included are entries regarding phonograph orders and daily manufacturing schedules. At the end of the book is a notation concerning an agreement of July 22, 1915, with H. H. Meno Kammerhoff, supervisor of operations at Edison's chemical plants in Silver Lake, New Jersey. Other Edison employees mentioned in the book include experimenter Charles T. Dally and chemist Victor L. King. Chemical manufacturers and suppliers mentioned by Edison include Binney & Smith Co., Butterworth-Judson Co., and General Chemical Co. The pages are unnumbered. Approximately 150 pages have been used.

Spent Nitrating Acid

Lead	0.00 –	
Iron	0.08	
Acidity	74.93	
H_2SO_4	71.80	
HNO_3	3.13	
Oil Myrbane	Trace	
Sediment	None	
Specific Grav	1.635 =	
Weight	14.33 lbs to Gal (air)	

Yield

Johnstown Plant 1220 Gals Day

Loss	390 Gal	33%
Benzol	403 "	38
Toluol	183	15
Xylol etc	183	15
	1156 –	

balance unaccountable losses

Saleable 769 gals

Appromate Estimate

Woodward,	2000 gals	
Benzol	1200	60%
Toluol	120	6%
Sol Nap	130	6%
Loss	560	28%
	2010.	

~~Wrong 38%~~ Aug 30 · 1915

1450 gals saleable,

Exp'mt –

48 cc aq. 39.6% White Salt
13 grms salt.
40 cc Sulfonated Mix

Vac filtered

Cake dried	24.4 grms	
White S Cake dried	16.0	39.6
Yield 1.01	40.4	

48 cc aq.
13 grms Salt 27.6% White salt
30 cc Sulfonated Mix Dry

Cake	23.0	
White Salt.	8.8	27.6
Yield 1.06	31.8	

48cc aq 18.3% White Salt.
13 grms Salt.
20 cc Sulfonated Mix.
Dried,
Cake weighed 16.5
White Salt 3.7 = 18.3%
20.2
Yield 1.01

Above experiment is rough as
Cake material not centrifuged,

From this experiment

48 cc aq
13 grms salt.
20 cc Sulfonated Mix is
best, this equals

600 gals water 4800 lbs
+ Salt 1300 lbs
The salt increases bulk 9%
654 gals
Equals 2.1 to 1 Vols To 1 Vol Benzaldehyde mix -

Miniature Lamp single leaf graphite flake
Cut, Ceylon large flake unless as semi transparent

Buffalo Foundry & Mac Co
#6 grade Cast iron OK for
Oleum – no loss –
In Centrifuge acid in 65 hours
Loss 0.42%
#2 = in centrifuge acid 0.42%

Kings notes

If charge of Sulfonated mix is 200 gals then not less than 400 gals water + 900 lbs of Salt should be used. 22.3%

I suggest 500 gals water 1150 lbs salt be used first + if found OK use 400 gals water + 900 lbs salt,

I dont think it possible to go below this limit

We always used 2 Vols of Salt Solution to One Vol of Sulfonated Benzol mix

One inch sqr 1/32 thick immersed in Centrifuge acid 20 air had access

Copper lost	609 milgms
Brass "	90 "
Nickel "	65

3 day test

Quenching Tank 8' dia 6' deep

Kings address Dr Victor King
Monki Ave + Woodridge Sts
Woodridge NJ
Telefone 352 Rutherford

De La Vergne Ice man says, icing troubles on cans + pipes stopped by using brine 23 Baume Dally had it 10 Be now 13 Be

CaCl comes in drums 400 lbs
got on hand Aug 10 5 Drums

German Pat 281,432.
Coumerione.

Myrbane Extracts all the Aniline from its Water Solution?

In fact The Nitro Compounds Extracts from Water all the reduction products made from them — This is general —

Scheme for black dye —
Stockings dyeped in Albumen
4-dyied then in H_2SO_4 or Metabisulfite
then quick in water Washed
pre-oxiced then treated
formaldehyde —

Yale Lab fusion

108 grms factory BenzNa
75 grms NaOH.
Required 15 min fuse NaOH
15 " put in BenzNa
30 " After —
Temp 275 To 290 C —
Yield of 1/2 of the Cake
44 cc + 6 cc from Benzoling
50 cc Total.

600 gals Water
1350 lbs NaCl when dissolved
increases bulk 9.1%

If fusion liquor is filtered & neutralized with 98% acid no Iron shows, gives a milky liquid, if too much water used white floculent tangles on bottom side of floating Phenol

(11)

Investigate Latest Benzenesulf Na
not all soluable in water or acid
but soluable in Alcohol.
which if diluted with water
throws down crystals Leaflets
What is it

Get solubility of Benz Na
* in our Salt Sol used reg + also
in Conc NaCl also in Conc
Na_2SO_4 & mixes of both.
Later 1 gram dissolves in 50cc sat NaCl sol

Took 2 grms damp salt from
Centrifuge put in Drying oven
for 2½ hours 208 to 212 Fah
Lost 386 Milg - 19.3%
After 12 hours in air it
reabsorbed 193 Milg or
50% reabsorbed

*

Saturated Solution Sulphate
Soda 80cc dissolves one
gram Benzsulf Na

Strange ? Made strong Sol
of Benzsulf Na powered a
little into both saturated Sols
of Sulfate Na + NaCl
No precip. added
Shake salt No precip, cooled
by hydrant water. Only
Na_2SO_4 showed traces of
precip — This shows
Benz Na quite sol in both
Solutions of course they won't
hold much but I think
50cc will dissolve 8 or
10 grms at temp of hydrant
water. This is contrary
to * Experiment on third
2 page Investigate

Cumerone Resin can be made from Solvent Naphtha by using 98 acid in very thin streams violent agitation & cooling Coil in Solution & keeping it below 40 Centigrade.

Investigate

See if Cumerone resin condens with 6/4 & Para –

Also if it will mix with Rubber & be Vulcanized OK & withstand Heat 33% RO#1.

Want 2nd Hand Hydraulic Press at least 24 X 30 for Ambrola Cabinet Expt

Acetanilid has to be dissolved in H_2SO_4 & then Mixed acids run in, As we use 4 acid to 1 Acetanilid it looks to me that the waste acid could run a second batch by just adding 42 Nitric –

Or use the waste acid to dissolve the second batch of Acetanilid –

Long fibre Asbestos grafited & sold for packing (64 Johns Manville

In Oleum 3½ days swelled to double its Original thickness is attacked but its OK for use

In Centrifuge Acid only swelled 1/3rd & not attacked at all.

in fusion liquor OK not affected

850 cc water with 10 cc
Phenol dissolved in it +
195 grams K_2SO_4 added
didnt salt out any phenol
but when saturated it came
out
When there is excess of Phenol
dissolved it salts some of it
out but last part dont
Come out on 23% + I doubt
if it all comes out on saturation

We should have one Extra
Aviation for our different
Motors, Important
Especially 7½ HP Stinson, See McGovern

Cost one Anilin Pot Complete
without tanks
$1,654

In NY Cold storage use 22.Be
$CaCl_2$ 1.163.
$MgCl$ will also answer
Saturated $CaCl$ or $MgCl$
should remain liquid at
5° Fahr

Benz Na 2 grms spread out
on 4" watch glass Lost
in Dryer at 90°C
in 30 min 8.7%
in 60 " 9.2
This shows 30 min will do for
Quick test.

Have we glass bells on all
Anilin Pots ?

Cost Benzol Woodward 60 C
with my profit out 47.83

Phonographs

Aug 5th 1915 —

Mfg Schedule —

	Daily
# 100	65
150	40
200	35
250	25
Amb 30	33
50	20
75	15

Cabinets on order

A # 100	12698	
C # 150	9187	5 on hand
# 200	6100	51 on hand
# 250	5000	- 3267 on hand
# 80	144	348 "

Disc on order Aug 5

# 100	6000
150	3458
200	3144
250	1675
	14277

Christiansen want Jack Quinn — as permanent pipe C fitter —

1 & 29 in Titanium Alloy Cos Catalogue is not in the least attacked by Centrifuge Acid # 29 can be rolled like Brass # 1 cant

150 Gals Benzol
245 " Mixed Acids
give 1500 lbs Myrbane
Average Cost 3.35 cents lb
3510 lbs per Nitration.

Acid $ 117.78
Benzol 90.00
$ 207.78 13.85 c lb —

Water saturated with NaCl at 15°C has 1.207 sp grav
35 parts NaCl to 100 parts water is 26% saturation

600 gals Water 4800 lbs
Labels 1680 dry
Salt. 1600 ok but its doubtful if Kings proportions are not better

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Kings Calculation is that for an output of 6000 lbs phenol we need only 750 lbs Schell Salt
1380 lbs 98% acid
9600 lbs Oleum 20%

For Aniline 3000 lbs daily
450 lbs 40 HCl or
565 " 32 "

Weight of 1st old Benz Na from Centrifuge dried weight 40 lbs per foot lump —

King says fused 15% Oleum dont need any 98% acid use all Oleum —

Schell Salt Sol'n 1.857 pts water at 15°C 100 pts dis water at 15.5°C dissolves 200 parts Naphthalene I found 40 pts water dissolves 50 parts Shell salt + is ok 66% sol

Benzene sulfonic acid mix at 86° Fahr 30°C
sp grav 1.470 - weight 12.24 lbs gal —
Centrifuge acid weak 10.05 lbs gal

120 gals water 1200 lbs
Shell salt dissolved gives 217
gals increase of 81% in
bulk

Schell salt Reaction Tank
with stirrer 11 gals to one inch

Shell salt Tank 6 gals to one inch
Use liquid 36" high in bath

Reaction Tank holds 400 gal
to this about 60 gals shell salt
solution used dependent upon
the assay

Oleum Spec 9
1.875.

Solubility of Salt NaCl
100 parts water dissolves at

9° Cent	35.74
14° "	35.87
25° "	36.13
40° "	36.64

Saturated at 15°C. Spec 9 1.207

Kammerhoff
110 Litres Benzol
170 " 98% H_2SO_4 2.96 to 1
Requires 8 hours to Sulfonate
Can make 3 sulfonations 24 hour
73.5% H_2SO_4 26.5 Benzol

Fusion. 900 lbs Benz Na
720 " NaOH.
Requires 7 to 8 hours. Can make
3 fusions in 24 hours
44.5 Soda 55.55 Benz Na
Produces 420 lbs phenol.

Kammerhoff

Neutralization & settling requires 8 hours, Get about 400 lbs Phenol

Sulfonation

275 gals Benzol put in during half hour then put in 30 gals 98% Then add gradually 213 gals 20% Oleum & at such a rate that the temp does not exceed boiling point of the Benzol, Test from time to time for disappearance of the Benzol.

Takes 20 minutes or more to unload a Shuch car

Takes 5 min to fill measuring Shuch box at Centrifuge

Fusing

We use 3600 lbs Benz Salt with an additional amount added to correct for acids & moisture, Generally 300 lbs extra. We use 2900 lbs Soda. Temp of fusion kept 275 to 285 Centig. Run half hour after all the Benz Na is in.

Last 6 wheelbarrows 150 lbs Each put in more slowly to prevent boiling over

Quenching Tank put in 1600 gals then Tap pot after running 3/4 hour with

Doubling add 6 inches more water run 1/2 hour & then pump to big settling Tanks

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Calibration of salting Tank
13.3 gals per inch

Exprmt = 100 cc Saturated Salt Solution if we add 50 cc of 98% H_2SO_4 very considerable Salt Comes out Had to add 65 cc more water to make it Clear again —
From this it looks as if Kings Solution is best with 22% Salt,

300 amp 3.5 Volts will work Chwichwards self Starter on Ford under worst Conditions

Dally's Salting Tank
1 1/8 inches per 20 gals -
After salt is dissolved,
The Volume increases 9%
This should be measured
Then One Volume of Benz Acid acid used with Two vols of Salt Solution,

480 gals water used this
Comes to 28 1/8 inches of salt
put in it will go to 30 6 inches
or 44 gals more making
524 gals This will take
Care of 262 gals Benz acid

With 275 gals Benzol 243 acid
we have 518 gals but it
shrinks 11.2% in sulfonating
Leaving 460 gals — Benz acid

230 gals of this requires 2 to 1
460 gals Salt Solution or 64
gals Excess King say should be Excess

Yale Test for sulfonation of all the Benzol put in test distillation bulb + distil over the Benzol This may be good test for finish of sulfonation

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When a fusion is quenched + 6 inches of extra water added to the Original 1000 gals I found when stirrer running the liquid was 12½ inches below top of tank at edge When stirrer stopped it was 17½" below

Our large fusion liquor tanks, the capacity below the mud cock is probably 200 gal.

Soda drums weigh 675 lbs 21" Dia, 30" long 3000 lbs is equivalent to 211 gals

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Our Shale Salt has acidity of 12%. Requires 110 cc neutralizing 100 cc Centrifuge Liquor Acidity 15% Its much higher now

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50 cc water 50 cc 98% H_2SO_4 When Cold Contracts 4%

Alkaline solution in Quenching Tank before the Extra 6" of water put in has Sp. Gr. of 1.215

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100 cc #2 fusion liquor nearly neutralized with waste Nitrating Acid + fumished with CO_2 gas ok Nitric dont affect the Phenol - when combined over

It only requires 30cc of
1/2 aq 1/2 d/8 to neutralize
100cc #2 fusion liquid
against 110 cc Theff acid #2 tank
got 10cc phenol.
#3 fusion gave same amount
which is about 1700 lbs per
fusion

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100 cc Centrifuge acid required
10cc Shale Salt liquor
this was when Centrifuge acid
15% acidity

In neutralizing add
1/2 lb Salt for every gallon
alkaline Salt, This is
about 1000 lbs NaCl per
fusion,
with Mud filter solution
it will require enough
to saturate.

In alkaline settling Tanks -
the Cocks are 11" apart
down to 5th Cock then 28"
to Mud Cock -

Fusion Pot thru 1 1/4" hole
Emptied in 23 mins - When
Sluggish towards end the 2"
bar should be driven deeply
in -

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3 ft Tank	52.88	gals per foot
4	94 00	"
5	146 88	"
6	211.50	"
8	376.01	"
8½	424	

Fusion pot holds about 1700
gals when the extra 6" water
put in - 6,375,000 cc.
63.750 100cc of 10cc phenol
to 100cc Calls for 1416 lbs
phenol per fusion -

(31)

Atomic Weights

Cl	35.4
Cu	63.6
Fe	56
Pb	206.9
Mg	24.3
Na	23.
S	32.1
Zn	65.4
H	1.01

3600 lbs Benz Na should on a basis of 7 lbs Phenol for gal Benzol give 241 gals Phenol—

Our tests show 80 to 100 cc of alkaline solution 42 cc by benzoling - This with 1700 gals calls for 1416 lbs or 177 gals phenol This is 64 gals short.

So far we have only got 684 gals from 6 fusions although not all neutralized say 1/2 a fusion—

We are 378 Gals short on our tests with 100 cc + 762 gals short on 7 lbs pounds phenol per gal Benzol—

275 Gals Benzol should produce 4632 lbs Benzinesulfonate Soda

3600 lbs Benz Na should produce on a basis of 7 lbs phenol to gal Benzol 1554 lbs phenol 186.6 gals

Theoretically 275 gal Benz of should yield 2716 pounds phenol + 3600 lbs Benz Na yield 1880 lbs phenol. or 13.2 cc for 100 cc of Alkaline solution

Did I order the 3rd Egg for Aniline pot,

One gal Benz of should make 16.84 lbs Benz Na salt Theoretically

2.316 lbs Benz Na on basis 1 for 1 gives 1126 phenol or 1555 lbs for 36000 lbs fusion

Each sulfonation should yield 2000 lbs phenol on basis 1 for 1

From rough experiments the Shale salt yield is 15 % of total

Undried white salt from Newark man has 3% moisture

No 29 alloy Cu4Al made by Titanium alloys Co. Niagara Falls Can easily be rolled in sheets & resists HCl + H_2NO_3 perfectly even when air gets access.

#1 alloy ok but too brittle to roll.

Quenching tank initial water 48" deep as 2" is left to 46" net, the fusion mix raises it 9½ inches or 55.5"

55.5 inches for whole change net,

35.33 galo per inch hot

1962 Gallons.

The number of CC in lots of 100 CC is

74,261.

Lancaster Chemicals used 71% pure 98% in st. 56 Baumin for each fusion requires 3½ tons -

Water Dia quenching Tank 8 ft 5 1/3/4 inches

424 galo per foot

35.33 galo per inch

left off 1962 galo Extra 4"

74261 - Sections 100 CC Each

1 CC =	165	lbs Phenol
2	330	
3	495	
4	660	
5	825	
6	990	
7	1055	
8	1320	
9	1485	1550 Due
10	1650	
11	1815	

Our new filter presses 30X30
40 plates — 2/3rd Capacity of Kammerhoff
22 Cubic ft mud
Kammerhoffs 36X36 — 48 Plates
Holds 36 cubic ft of mud
Gets 650 gals liquor in 20 minutes
Mud weighs 2160 lbs —

One quenching tank 1962 gals increased in bulk by salt + usual #2 Tank acid on basis 63cc acid for 100cc Alkali To 3430 gals —
Later we stop the addition of 4th by two quenching 1962 gal
This gives 129.825 sections of 100cc

½cc means loss of 144 lbs Phenol
1 cc 288 " "
1½ cc 432 " "
2 cc 576 " "
2½ cc 720 " "

	Not quite Correct		Gallon Tanks
Should get	1550 lbs	193	96
½cc In Acid Set "	1404	176	88
1 cc " "	1258	157	78½
1½ cc " "	1112	139	69½
2 cc " "	968	121	60½

Regeneration Flake from old Calis —
K Arsenite Colloids Rinsed completely 24 hours — dissolves some —

Seignette Salt Colloids —

K Ethylsulphonate ditto gives brown precip — Phenomenon

Kings says 750 lbs Shakesalt
6000 lbs phenol — or 250 lbs
per Sulphonation, We use
1237 lbs for one sulfonation

Shell Salt
120 gals Water 20" in tank
1200 lbs Shale Salt in 36" in tank
6 gals to 1" Hence 216 gals

In Salting Dally uses 480 gal
water 1080 salt, the bulk is
increased to 523.
Use 261 gals Benzsulfonic Acid
We will use 115 inches for Benz Acid —
Salting Tank 28 1/8 inches
480 gal water.
Use Two Vols of the solution to
1 of Benz Acid +

Slush Can from salter
55 Cent 9 am
47 11 "
34 2 pm
34 5 "
29 — 9 " 12 hours

Brine Brine 5° C below
9 pm — Temp 29 deg
12 23 "
3 am 18 "
6 am 17 "
9 am 12 " 12° in center in ok
12 hours

Think it should be 10 hours
in water 14 in Brine.

2 Tank Shell salt acid
26% acidity — to get 33%
acidity add 7 gals to
Each 100 gals of tank acid
for 6 Sulfonations daily will
require 110 Tons per month
too much — will try 30% monday
4 gals to 100 —

From our Experts.
One Sulfonation Requires 960 gals
Salt Solution,
82% of this is Centrifuge acid
100cc of this acid should use
100cc Shell Salt Solution –
Total acid from one sulfonation
857.7 gals – Required
85.7 gals Shell salt
10% of the Centrifuge acid
5.5 lbs White Salt per gal
This is 472 lbs White Salt
per Sulfonation,

Square Circle .785

Shell salt Barrel measures
Dia 28 – heighth 38"

Sept 1 King says: 250 lbs Shell salt
is the optimum of 2000 lbs phenol
It is not possible to work with less than
that amount –
The 250 is unacceptable to considerable
Variation – Unless the temp of Wash
Can cliff rises up by delay, if warmed
up more precip passes into solution
& hence requires more Shell salt
for its recovery or if an excessive
amount of water is used in the
Salting Tank, or if the Centrifuge
Material is washed too much
more of the Shell salt will be
required
24 hours should be allowed
for the White Salt to precipitate
In good practice between 250
& 500 lbs of shell salt are used
per Ton of Phenol
If more than that amount is used
some one of the above errors have been
made,

1st Filter Press used 59% Monsture —

It takes 5.0 ~~Minutes~~ minutes to Neutralize —

See Carm how 2nd Neutralizer progresses

Started 630 pm 2nd act alcoolic
didnt go above 28 lbs
3 Tanks were done at 15 lbs
1 at only 8 lbs pressure
last on 20@25#
5th finished at 415 am
4th 1.10 am —
We leave it till morning
its warm & may not coagulate
Average Tank full 1 hour
56 minutes
allowing 1/2 for unloading
this is 2 hours + 15 min
per Tank. 6th tank full 310 pm
We now will blow off + unload

Look 1 hour to run clean press
Saturday

We Crowder
Get Bryant

2.5 gal
one hour 4.0 min

100 cc Reg Test #2 Tank acid
Salt, all Regular = Expt time to separate

1.39 am	3 cc	Heighth 8 inches
140 "	4 cc	Our tank 12 times
142 "	5	higher.
144 "	6	
148 "	7	
157 "	8	
2 10 "	8.2	
2.30	8.4	
3 12	8.5	
430	9.5	

Filter Press Assume Cake 1 1/4 thick or all
Equivalent of Alkaline Sol. Then
each press full of Cake weighs
1575 lbs — 6 Tanks full
Assume we blow this not wash
as it would loosen Cake then of
60% left = Reg solution we
should lose

get Foster's pressure regulator for filter press pump raw Foster is in Newark, Ohio
Lord mi -

Yesterday 800 should give 79 gallon
One settling Tank
4.5 inches — or 2.25 in Neutralizer Tank

Think we should wash Centrifuge Salt with Cone NaCl, it will get more Bicarb Soda out
Salt do no harm on fusion
We make quite a lot of caustic if we don't use enough salt in original Salting -

Settling Tank	gals	Upper fusion	Neutralizer		
3.6"	63	1008	1.8	1 13/16	31.5
3.7	64.7	1035	1.85		32.35
3.8	66.5	1064	1.9		33.25
3.9	68.2	1091	1.95		34.1
4.0	70	1120	2.	2"	35.0
4.1	71.75	1148	2.05		35.87
4.2	73.5	1176	2.10		36.75
4.3	75.2	1203	2.15		37.5
4.4	77.	1232	2.20		38.5
4.5	78.7	1259	2.25	2 1/4	39.3
4.6	80.5	1288	2.30		40.2
4.7	82.2	1315	2.35		41.1
4.8	84.	1344	2.40		42.
4.9	85.75	1372	2.45		42.87
5.0	87.5	1400	2.50	2 1/2	43.7
5.1	89.25	1428	2.55		44.62
5.2	91.	1456	2.60		45.5
5.3	92.75	1484	2.65		46.7
5.4	94.5	1512	2.70		47.2
5.5	96.25	1540	2.75	2 3/4	48.1
5.6	98.	1568	2.80		49.

3rd Run on filter press 7
Tanks full. — This one
was below bath scales.

Stopped showing left scale
which got 600 cc minute.
6 min to gallon

Hydraulic for Cabinets

37.83 $\frac{100}{c}$ in gal

143 grams to 100 cc (Benzsulfacid)

11.92 lbs to gal Benzsulfacid

275 gals Benzol sulfonated
should give 4632 lbs of
Benzine Sulfonate Soda

3600 lbs Benzinesulfonate Soda
on basis 7 lbs Phenol to gal
1554 lbs 186.6 gals
46.65 gals per neutralization Tank
93.3 " " Settling Tank

Theoretically 275 gals benzol
should yield 2418 lbs Phenol

Quench Tank holds 1962
gals, should get 11.88 cc per
100 cc — allowing 8% of water
in Phenol this gives
1880 lbs pure phenol which
is theoretical

98% H_2SO_4 ½ water ½ acid
has Spec gravity 1.500
48.1 Bauma. H_2SO_4 59.7%

Des of 9 ordered 3rd Eqq for
5th Aniline pot.

1 Gal Benzol should make
16.84 lbs Bengsulf Soda
Theoretically

2.316 lbs Benzensulf Soda
should on basis 1 to 1
Produce 1 lb Phenol

Each Sulfonation on 1 to 1
basis should net 2000 lbs
Phenol.

Newark White Nacl has 3%
Moisture,

24000 Records daily

	Day	M bulk 24 hrs
Shellac	2500	77.000
Para	46	1100
Phenol	3300	80 000
Wood fibre	16000	384 000
Sandr		

Our Acid for neutralizing
Still contains 4 grams Benz Na
in 100 cc or 152 grams per gal
which stays in at ordinary Temp
but comes out at 35° Fahr
a loss of probably 468 lbs
in acid necessary for 1 fusion
+ loss of 203 lbs Phenol

Evidently Shell Salt settling
Tanks should have water
Jacket + brine circulation

1 lb Benzol theoretically should give 1.205 lbs Phenol, 8.796 lbs per gal.

4065 lbs Benz acid in forming 449 lbs water produced 1492 lbs dry salt required to Convert the acid to Na Salt 1399 lbs 110 gals Equivalent to 95% H_2SO_4 left.

Requires 1656 lbs salt to Convert the whole of the remaining acid into Soda Salt

1492 lbs salt produces 926 lbs of HCl. whose neutralizing Capacity equals original H_2SO_4

1656 lbs Salt gives 1028 lbs HCl.

Kammerhof says his crude Phenol has 17% of water + makes loss of 2% in still Nets about 80%.

Conc solution Benz Na poured into Conc NaCl gives no salting out even in ice chest?

Try if Dimethylaniline Sulfate or base or Phenylhydrazine or Quinoline in A4 cell will change polarization + form of Curve. Chem Abs 15 2026 Aug 10 1915 - p 2141

Polymerized Vinyl Esters such as Vinyl Acetate Vinyl Chloroacetate by heat or by quartz lamp gives a solid transparent substance like Celluloid fire proof & odorless German Pat 281,687 July 4 1913 Chem Fabrik Griesheim-Elektron Chem Abst Aug 10 1915

Dec if 5% Para polymerizes Gelatin - Glucose, Sugar

We lose .66 of a cc in 100cc waste Liquor - If we use 80% of acid to neutralize This gives 3600 gals waste liquor 133000 $\frac{1}{100}$cc 1000 195 lbs per fusion 24.3 gals 12.1 gals per settling tank, should get 84.7 gals without considering Water

When a leak in lead lining takes place and weak acid acts for some time like for instance a leak in Shale Salt Settling Tanks the acid from this when poured into Alkaline liquor makes deep black precip of Magnetic Oxide of Iron & its impossible to separate the phenol, the acid must be thrown to the sewer

For each fusion about 59 lbs of Lead Chloride is found in the Berg Na Salt 3900 lbs — 8 fusions 472 lbs PbCl per blast comes from the Linings of Salting Tank Centrifuges Shelf Salt Mixing & Settlers & 50 & 2 Storage Tanks —

Jac Haymon Salton on the Telephone Wa - 9842 -

Note book of an attache [illegible] present War - get it -

French in America
Finley -

Washing CO_2 800 lbs Coke 24 hrs 8 sections 1 ft each 2 ft 6" sq
is ok.

Standard Chemical Co
Maywood

50 Baume 62.5% H_2SO_4

Winnemah Dry Salt Cake of we get Chamber acid -

463 lbs water formed in one sulphonation -

SO_3 in the 213 gals taken care of 149 lbs water to reach H_2SO_4 -

We gave Kaumhoff a month ago a Carboy 98% get it back -

Speak to him about Chamber acid to dyehers 98 -

Talk Chemical Engineering Dept
re Nitrating Acid

Ask B & Judson send 299

Simpson How about Steel Battery
box for Auto battery + Req A4

Constable = How about hardening
furnaces layout,

Constable Explain my hot acid
Scheme for Japanning

Constable, Layout plating Dept

See Kammhoff about distilling
methylene — in bottle stock

Determine H from A4 - after charge
standing & also discharging

30 days

Analine pots average one
Cycle Every 30 $\frac{1}{2}$ hours

Solubility Sulfate Soda +	100 pts H_2O Dis at Anhy salt	Crystlzd
0	5	12
11.6	10	26
17.9	16	48
25	28	99
30	43	215
40	48	291
50	46	262

Sulfite Soda	100 pts water dis at
0°C	14 -
20	29.4
40	50.

Carbonate Soda

100 pts dis	Anhy	Cryst
0	7	21
10	16.6	62
20	26	123
30	36	241
104.6	48.5	420

Bicarbonate Soda, 100 pts H_2O Dis

	Anhy	Cryst
0°	7.92	8.95
10	8.88	10.04
20	9.85	11.15
30	10.80	12.24
50	12.72	14.45
70	14.64	16.69

In washing phenol for stills using 1/4 of acid 1/2 + 1/2 then with 900 gals — 54 lbs is lost in the acid.

50 × 50 acid is too strong it acts on phenol in purifying & probably in Quenching solution — Throw away one (bad) OK when first used in con

See if there is any metallic phenolate that will precipitate phenol out other than Benzoline —

50 X 50 acid OK for neutralizing also 1/5 for crude phenol to get water out best after that any more reduces phenol —

a phenol 305 cc treated with 61 cc 1/2 + 1/2 leaks water out to such an extent that water & calculation increased to 170 cc

Crude Phenol from Carbonating Reg fusion liquor contains 27 % of Water which is thrown out by treating it with 1/5 of its bulk with acid 1/2 + 1/2

(10) 370 cc crude clear phenol treated with 61 cc 1/2 + 1/2 acid shows 170 cc clear liquid

thus depriving the 370 cc of 100 cc water —

1 gal Carbonated gives 272 cc of pure Crystalized phenol — using benzol + 1/2 + 1/2 and Dolly's fusion liquor this is accurate —

Tribromophenol after Benzol shows considerable —

Phenol washed with 1/2 + 1/2 gives 99 % Crystalized phenol after distilling

Daily Average
with 1/2 + 1/2 acid
75.77 gals for
2 neutralizing
3 " 113.65
+ 100 lb Chlorine
68.7 gals 2 neutralizing

Get about 1000 Crust of residue redistilled — for Chlorine acid
+ 900 # of halesalt use per fusion —

Tin lined pipe is fine for phenol stills —

Phenol is purified sometimes by refrigeration several times

One Sulphonation Costs

Acid	$ 42.00
Benzol	165.00
Salt	5.00
	212.00

Product 4600 lbs
Benzenesulphonate Soda

4.68 Cents per lb of
Benzenesulphonate Soda —

$168. for 3600 lbs for 1 fusion

1000 lbs yield 16.8 Cents
1/2 + 1/2 → 5.0
21.8

Expmt to Extract Maximum Phenol from Waste Liquor by Benzol find best working Conditions -

See if Phenolate Na is sol in Benzol -
in place Benzol
Try Camphor oil -
Turpentine
Benzine
Solvent Naphta
Olive oil
Castor Oil -
Straw oil

Have Tested put in Each Carloon, Cyl Disc
about Speed -

Agent Maxwell taking 1 of Riley's best men:
To H 400

Need - about a man to attend to Unloading Ele

Bachman put in a good man to determine just how many gross splints not per Carat + amount of peroxide required

Investigate Capacity Sno Balls use other parts big oldy to get H2O2 cheaply

---

Kammerhoff gets 1 lbs pure phenol for 1.32 l Gs Benzol
5.52 lbs per Gal

Andrews Soap 45% Chloride Sodium
in our Benzinoline for [illegible]

Thus our charge of 36.00 is
reduced to
34.38

& instead of yielding our
basis of 7 to 1 1550
Should yield only
1482 Pure

In the shade of the old
apple tree - [illegible]

Calvert Maintains Phenol
not an acid dont combine
with Soda — To test this
Extract Quench [illegible] with
[illegible]

Eggs bigger Dodings
[illegible]

Invisible [illegible]
piston Cooler

Tell Luhr about
plating of roll for
Brush

Books for blind use
Reg ink with [illegible] powder
to test letter

36 – Around 330° 78% pure phenol
37 " 335 81 1/2 "
38 330 82 1/2

We can count on 82% pure in the Crude phenol when 1/2 + 1/2 acid used

60

60 cc Marons CO_2 phenol. 16 cc 1/2 + 1/2 H_2SO_4 got 41 cc phenol 34 cc acid
Phenol reduced in bulk leaving 68.33% phenol.

take 60 cc CO_2 phenol
+ 5 cc 98% H_2SO_4 shake up well in separatory funnel
44 cc phenol settled out
20 @ 20 1/2 cc acid separation
Think Even less pure cap
well done We count

Use 1% washing bottle + add acid gradually - well and Coloring phenol for the ~~slightest~~ lightest fraction it turns it from Red to very light yellow There is no heat the bulk of phenol is no great,

3 cc 98% acid 60 cc CO_2 phenol it colored it a little but it still lighter than original.

Total 64 cc
46 1/2 phenol 18 1/2 acid –

It may be dangerous to use 98 so men may neglect in color phenol – a little lower grade say 75% acid may be more practical

10 lbs 21% KOH, 2 lbs H, to 1050
lbs phenol turns white
very phenol red
Stops SO_2 from reducing
Blue litmus —
Think that 3 pounds
of such a strength of
Soda as to be equivalent
to 5 lbs of 21 KOH 2 lbs
is sufficient to neutralize
the SO_2

Later without stop
Reducing of blue litmus

60 cc CO_2 phenol 4 cc
Syrup phos acid – Very light
color total 64 cc
45 cc phenol

60 cc CO_2 phenol 3 ½ cc HCl
Total 64 ½ cc 49 cc phenol
fairly light

Loss of phenol.

1 = not stirred enough in neutralizing
2 = SO_2 gas spurts out carries phenol
3 should be replaced of 28 % by
weight 30% or about 8 to 10 %
more than usual determination
4 = last part settles slowly
5 38 dont work like other
full white,
6 - Cooled gives better yield ½
cc — in 60 cc — or 8 cc more
13.3 cc per 100 cc # 43 batch

~~Mercaptan straight~~
~~Order~~ 3 Big Tanks
for Neutralizing
3 for No 2 Cresolic -

Neutralz - Low Phenol

#7 = How are 30 1/4" & 9" be measured in Neutraly Tank, if we are not sure. Total makes 39 1/4 see if it does -

#8 - Possibly Lead lining in Neutralizing Tank as bulged out & we are not getting 30 1/4 inches at all -

#9. possibly Mush of Crystals form at bottom of Tetralin Phenol in -

Insull - Hubbels - Cpt work
Walker Truck

Phenol run
2 hours run up to pressure
5 1/2 to 6 to complete reaction
2 hours to distill off water,
4, hours for superheater
1 1/2 to Cook off all water
15 Hours -

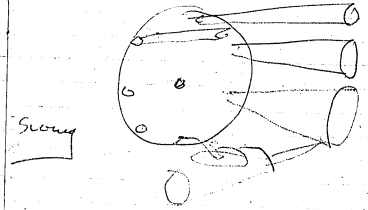
Chemo man, Clean Engg
working another job -

Dillys measure for phenol
Corrected

163	is actually	200 gal
150	"	180
136		160
120		140
105		120
87½		100
72		80
54		60
38		40
21		20
16		15
10		10

Have Werner Dup with
2 Disc Records
playing - locked
to pillar & all one just
behind other - 5 Tunes

Crowfoot
~~Ephedra~~ leaf



+ So on to last leaf
angle

French broom fine - Yellow

Be sure + interpose the Repeater Cond in a Recorder to caution Bonei & other electric phenomena —

also Mufflers in front of Connect etc

$CaSO_4$ grams per pint
$CaSO_4$ 1.268
K_2SO_4 1.336
$NaCl$ 2.9 in Colorado spring water

Pass air through tubes in which platinum wire red & burn Illinois coal air & Condensers by memory [illegible]

19818 gals
~~1320~~ per fusion has been average
hanger filter pressio-

Expert of filter Clean
Acetals Sucker —
~~2 gals will be sent up —~~

Ree Bt Judson send more cars to take all the acid.

Want bigger blower for Dust Dryer

Denewchder
Coating Hard Rubber
Disc with per wax
on a chill —
undercut to prevent
deft —

Pentachloride to
absorb. Hydrogen

Adjust
Hatch-Cash, Strauss
for a bag they use to
hold powder for
big guns —

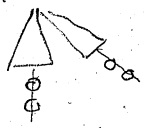
Mason Run Benzolin
plant in lab to get
phenol out of Carbonated
liquors at Carbonolin
Recovery plant —

Inverting at Dipping. Longer
solution is exposed thinner
at gels. Soak your
once baby blanks after
dipping in your new
Expert to bake before
dipping.

Run Thru Each
week a smooth
blank to working Mons
to Catch defects

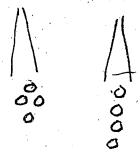
[81]

Try Sextette



+ Singers not made by circle

also



also

Rig up lense & Beam of light flat angle to see defects

Square recorder for 2-quart glass funnel

Rewind in - heavy plate of glass to even up over d/a - no see turning.

Try up Grain old Disc Machine for Stone Expert

Singers - Moved to press wood pulp electric to form Cylinder Vertically, to make press in moved

Dup from a Condensite
Master on to wax & make
working moulds, from wax

Double area with same taper
gives 4 times mouth area

twice length 4 times reduction
Keeping angle same & 4 times
mouth area - 4 times strength
No gain -
Only gain is by reducing
friction -

In repeater funnel only way to
transfer to air the power of the
is to have long column air
length increases loudness & overtone
& mellow - but friction should
be reduced. This should be
reversable as to recording as
to loud & mellow

Looks as if go far from mouth
to flatten frontings of corners
the angle need not be so
steep in funnel thus
reducing friction & increasing
area without increasing number
of reflections -

If beat is brass polish it highly &
make more seconds -

See Balkwill about split seconds

See if our repeaters make air
tight fit on funnel end if not
it will cause blowing -

Try idea on the record
of Middleton Wattis speaker
of buzz - also speakers to run
it down -

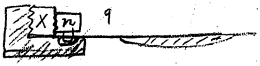
C85]

Keep at Moors till he clops
Splits on Edge

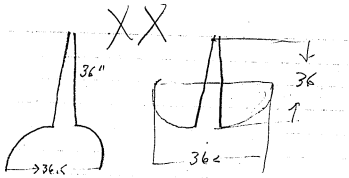
also Moors to clop Crays
by hardening blanks —

Put T a E
instead of Edison

Cork shellacked
all over —

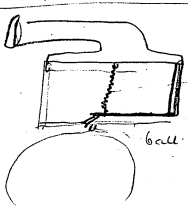


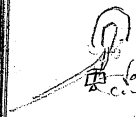
X fastens the Acets n
lightens it over g by
screwing down



Possibly to get
Base notes the
width of
Love shaped
box as long as
wave length —

Enclose
horn heavy
box





loose lead Plans -
Condition -

Select 6 dif funnels small + large taper - put ring with S Screw on + try various flares -

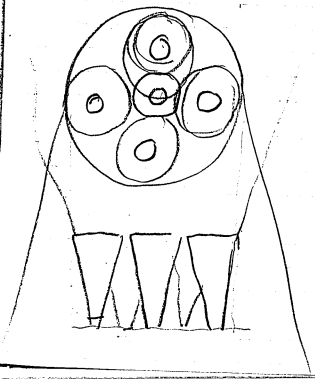
fig No 2 this way to try all flares. Also glass funnels with flare -

Try Vermuchen - Very shiny to determine fraction,

Hayes - Get Whispering Hope
Gluck's Homer Vic

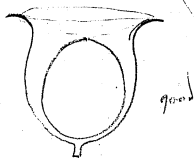
Song of the Shepherd Gluck Vic

Nitrogenous Chemical Co
West End Trust Bldg
Phila
H_2SO_4 60 To 66 acid
250 Tons start in January or Feb
will sell some -



Get some $50 week singers for Recitals, See Walter Miller —

Hahner Co. Berks (wood) also anything else to make a flare for funnels —



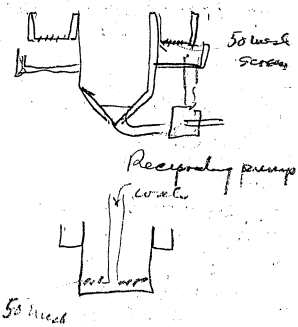
good

Try lot of Experiments On Varnish to get it longer when heat use small 1 1/4 plates — Etc —

Phones for Fagan & Ryan

How about organizing the Edison Mag. System for films direct with Theatres — or show in 20 large Cities them our jobbers. We furnishing Machines to Exhibit films

Have Treasury Comes over + see the single + triple flake separator —

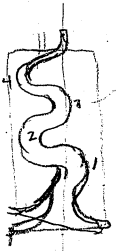


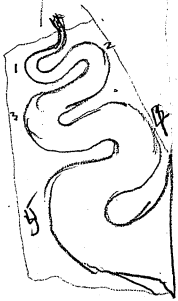
Mason acc account
Bengal Tower Leachers
Smith & Co

Andrews - How much
acid in / acid & [illegible]

Give flake [illegible] Co
Granular -

Epsom Falls Furnace natural
deposit 95%
Stewart Calvert Co
Seattle Wash -
get prices -





Note Cover Piano with
over except Hole
with felt Cover
Near

Mason How about
filtros bottom or
Cast iron bottom

[95]

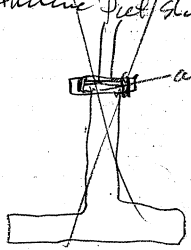
Rammelhoff - How about
More Elec Power

Dally Do you wash your
fellow Clothes often if
not your sweater
will look slow -
How often do you get
new Clothes

Questions, Want pure rubber for
our rings for Repro Dua -

W Muller got hold Barnum's
Sgt + Other 500 songs
Royally of 50%
Record ~~[illegible]~~
~~[illegible]~~

Aurline Pict Stories



also chewellers Gallow
of Cuckoo's nest -

Christenson How wo
Extra Shafts + paddles
for Para boats -
ditto Myrbane

Wife at Army & Navy Stores —

5 pounds yellow quicksilver
27 lbs acid nitric daily —

Hutch get from Brunner
Erroneous dates of ce
gum

Send to photo photo
for new pounds
Complete —
Telephone —

Wash out phenol after
acid with Carb Soda
this will remove
acid & phenol itself
not displace CO_2

We pay	A Type	100	15
	C	150	22
	C	200	27
	C	250	32
should pay		100	14
		150	20
		200	24
		250	28

The furnace condenser
hardware — 40 B oz per gm
Side burner, [illegible]

Dont forget to prevent instruments
from reflecting sound
when big ground used

Fix our violin with as thick cloth as practicable except the holes & see if sound is as loud as without it so this will stop tracking do reflecting board

See if increasing the flame on wind instrument doesn't increase the volume of a dulcimer —

Find nearest high office to west side great Saturday & get some quotations —

Lyon & Healy Machine & Records

Jany sales	Vic	compared with Dec	Dropped
1914	66%		61%
1913	75		60
1912	55		58
1911	73		59
1910	73.		45
1909	72		48
1908	73		48
1907	72		31
	Machines		Records

Dec Sales 1914

Machines $147000
Records $69500

Retailers

Takes about 52
grams 134 J acid
1204 Na to
neutralize 100
CC fusion Liquor
~~The acid 204 Na~~ is
dissolved in water
and temp & filtered
before neutralizing
Solution added
milky
48 grams for Jewel Chem Notes 1 lbs

Dec 1 — Estimate

Johnstown			Wood wood
Pure Benzol 34%			47.
" Toluol	16		6.3
" Solvap	16	from about	3
Loss	34	to Dec 5th	42.4

Assume light oil output already

1200 gal		1900 gal
Pure Benzol	408	969
" Toluol	192	95
" Solvent	192	95
Loss	408	741 —

Kaumuhoff uses 1.916 lbs
NaOH per lb of phenol
produced.

from this Daily showed
use 2837 lbs — Latter Cryst

Capacities of our present Cabinet Mfgs

Batke	Daily	300
Lincoln		200
Long		50
Richard		75
Yazoo		25
Barlos		20
for 1916 —		670

Add 25000 more to be placed over what we have planned

	Moly	Co/a
250 —	5000	1000
200	3000	800
150	5000	1500
100	7000	2700

Werner put bell card on your door
Close permanently inside door
for windows so can't see in —

Alunite

Subsulphate of Aluminum & Potassium

$K(AlO)_3(SO_4)_2 + 3H_2O$

Alum can be extracted from it
by repeated roasting &
levigation, also called
Alum stone — Alum rock
Get Dana's Min & Geny
to Upon

7.4/10 % K
10.7 % K_2O

25c Record — Glue faced
Thin Cellulose —

See if Sturtevant got
another Crushes
size larger on hand

Goodyear ~~Chemical~~ Chemical
Rubber mixing house

Dr Drake - Records 65.5 ave
Nov average machine ordered
last year 147.4 net 73.7

Cy - Records 18.3
Quach 16.95

~~Have ordered 300 000 lbs~~
~~Dec 6 - Have on clock~~
~~with enough to last to~~
~~January 1~~

Bot + on hand Dec 9 Shellac
592 388 lbs -
400 Tow pulp bot

~~I don't get Berger's~~
~~Daily Bal Report~~
~~Holy~~

Find from Hoffman how much
Shellac he is really using + how
much Resin + Phenol -

~~Ask Mallory - when he wants~~
~~Goldenrod~~

Where is B + Lomb Microscope
ordered not yet -

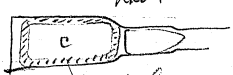
~~Pick out Artist for~~
~~Recitals~~

Fire powder at other end
Dusty Smokeless + ash of Cotton
+ bag in high velocity gas scours
Many highly heated 1/10 sec inch force.

Our shellac blank has not
enough cohesion dipping
mandrel surface OK + Chrome shrinkage
+ is powerful enough to split
veneer off - should be longer
no dry stuff see moon

Use cause of
Cracks alive

Now



X much slower powder
C " faster "

Stop Erosion.

Telapair — try gypsum varnish —
ditto hot sulphur —
fuse with soda, Nitre Cake
Ferric hydroxide,

Navy. mine tube subjected to
Hydraulic 100 000 lbs max to harden
metal —

Recorder — Grade edge wood
which drawing pulls —

Try Muddelson Record for blast

Watch wear on Drum
Match as against our wear
Try another stopper

Ask Moore how of w that our
wear test on Record show
bad at 400 if his mag
wear test don't show
Something wrong here

Moore Explain about split
Reviser record and Explosible

Write D Van N for Lateral & test
work on Gunnery, Range
guns Balistics

Max Cotton Lock with Lead powder
to stop pocking —

Arrange all Condensite records
be tested for blistering as soon
as made

Consultable about teaching
Learning men to show dealers
how to fix the Spring & record
& W & winnerly gun

Judas 2 Violin 1 Viola 1 Cello
Orch for Leading —

Fred Oth - Make another cellose film
for Humphrey - see Kennedy for
Talent

Dotty, thinnest gauge Japan
paper with film dope —
ditto silk with dope —
Get some gold & Water Skin -
Do. Very hard Condensate film
those not softened by heat,

Fred Oth, Discs of Magnesium
instead of Aluminum —

Kennedy - diffusion disc at
Center 1/16th inch on 2 Reflectors
ditto increase 1/16 - 1
" " 1/16 but thinner disc
Shellac the Cellulose film (some)

Get good Piano (second hand) test them
make another or say 2 more for
worth to run them - don't test,
Use new Piano

After testing new Seq funnels -
Make another doubt - cheaper
Angle.

Follow up Nitro Coke see
Mason & have a run tested,

New man for Elo dept go for
Hiemer for Leading —
found out when dent. fuse &
filter press & vats alive tank
will arrive for Sulfite -

Have the new photo-stable funnel
a tested.

Try a sounding board back of the stages.

Phone or ask Maxwell to phone to his old firm if they will send me a revolver without the rifling — just a smooth bore, if they cant try Smith & Wesson —

Liquid Oxygen in steel aparatus mixed with service powder.

Aeroplane, Calcium phosphide & phosph. drop on sea to light up — dittto Magnesium powder rocket. —

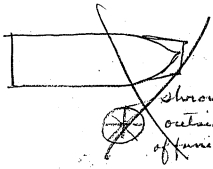
dittto wind favorable, small balloons floats mag by Tesla Mechanism.

simple boat,

higher explosive — 2 mass, lighter bullet — more of them 1/8 dia end wobble to square 1/4 or 5/16 —

Disc Monthly — Best Acts of all local Operas & Crews be published in the

Try magnesium + $MgCO_3$ with ~~water~~ South, spent acid to get rid $MgCl_2$ — Wks & Co



OK

shroud the outside leaves of funnel

Benny Smith & Co Nov 24/15
81-83 Fenchurch Street London
Spruce — Quality Lumber Spruce
12% Cobalt 7 @ 8% Ni
at $55. Ton Carload Cots &
$60 less than Clevelands
less freight to Orange —
N

See York Chem what price
they will take our Acetate Soda
& give us Glacial — see
Chrysler how much
Acetate K we can have
to that used —

try Epsom Salts instead
Mgcl —

Violin	20
Cello	—
Viola	1
Clarionette	7
Flute	8
Trombone	4
Cornet	7
Bass baritone Trombone	1
Baritone Horn	5
Drums	3
Mandolin	5
Guitar	3
Piano	6 by Mike 3 by Sai
Snare Drum by Ivor	1
Piccolo	1

At Works

Marvelous sensitive test for Potash, Sodium Bicarbonate & Sodium Hyposulphite, as sensitive as AgNO3 is for Chloride —

Tried test coll. dry ni tube dipped in Sol & then test night in KOH, Electrolyte —

Many losses plated Gold Collon Cylinder also bearing

also [illegible] copper plated on aluminum wire point

Bags made lead wire wrapped or tin, with metals to make Low M.P. Magnesium.

Dismantle Dry battery spraying powder under great pressure on way wash

Make Cardboard mate in closed Chamber just as phono is started to talk — Keep it up if no wavy start again with 2 violins if no wavy — Tried funnel 4 times seconds & also mouthpiece around touching phono to hear the sound lose Violins sample & two together near together apart. See if hearing John Oil does it trouble is player & telefone tapers it

Maybe Vibration of Chamber Sides or top for slats on top, moving pressure

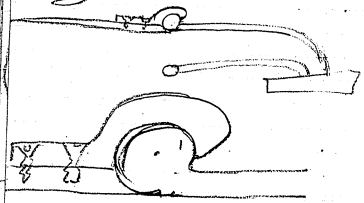
Jany 5 1916

Wavy motion on sounds sustained when played on strings not due to player — Neo Cellono.

Models Pictures Elopset

Explosives — Nitrate an acetate Cellulose
" non exploding Bicarbonate

John Oil —



Fixed funnel

Only want .005 shake as
Can raise up disc or lower
feed —

Urosol D Hydrochl p-phenylendiamen
Urosol P " p-Amidophenol
Urosol DD " Diamidodiphenylamine

Color produced by Oxdgn of these
upon fabrics by H_2O_2, Bichrom of
Quinone —

Discovered 1888 Eng Pat 2525
German 47349 — 51073 — 80814
French 195492 — 205299
No American Pat,

Five degrees need it badly

Mulhaly

Bug Dept Store Pittsburgh
Average price received for
Edison 176 00
Victor 61 00

We have for Sale —

1-1000 lbs. Ebonite
~~2-1000 lbs Carbon Gold~~
3- 3 to 4 Tons Mountain - pure
4-2 to 3 " Carbonite
5 2 to 3 " Mixed wax 5 mix of 3+4

4 is 830 lbs Stearic
140 " Ebonite
191 " Sal Soda
8 " Caustic Na
1/4 " Alf
1/4 Cousin

Layout Tin shop
L Shape
good lighting 2 of lathes
Hey Lewis

Maxwell — We should ask our Jobbers if they inspect their Records for Cracks before shipping if they don't it would save a lot of trouble for Dealers Etc

Mason did you Calipers
Check Cones

Medcraft Mason
Hood Bacon Test 10000
Gold Cambric Bengal

When Napthalene blocks are ok — put 1000 aside regular storage or inspect once monthly for a year

Moore in repairing Rub chalk or Lampblack in holes and Cracks & then Varnish

Spot Free Stains
Le Hour Pat Whips
63 lbs Motor 46
Cold weather stocks
10 V 250 amp

CYZIJ

Try grinding face of Condensate transfer & printing —

Constable takes Warner over working wild man —

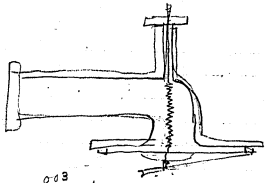
Transfer 4 onto a second then test transfer for music —

All alwaysch pages ahead of this page

Try rolling a transfer plate to 2 in it lips & take test strasses before going in oven

Draw lines on a transfer plate 1/2 of edge buff the line size 10/inch 4:1 apart & see if can hold on plate rate on transfer

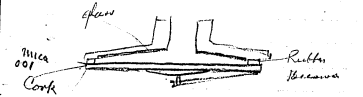
In printing - give very pressure & then for a moment give very heavy pressure to get the wrinkles —



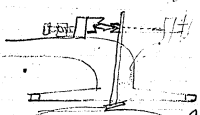
0.03
also .001
mica

also (fastened or clinched)
Ebonite - Celluloid - Cork
or Screw to tighten

Double Lucia 20/1000 [illegible]



Cork (impregnated) Gutta-percha
Kumbar or ebonite, amber.



Path of the Quadrant
Chalk Lighted
Chalk Lighted
Lamp Reflector
for Diaphragm

Speculum Metal, Rosse

Cu 65.15
Sn 32.78

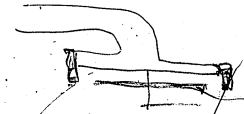
also

Cu 2 parts
Sn 1 "
Arsenic $\frac{1}{10}$ part

also

Cu 62
Sn 33
Arsenic 2.5
Brass 8

Experiments on Recording Cones

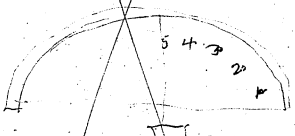


only partial

Very dense

Comparison ⓒ number on opposite disk —

10 then get big sound try a French horn or Cornet



at 1 to 5 to note if hollow sound disappears right in front where least reflections —

get some Balsa wood from Porto Rico is imported in US for floats — 1/2 the Weight of Cork

Also Missouri Cork wood 50% heavier than Cork —

above for Diaphragm

W C O'Hare
Telefone 2905
Columbus

Firework, 24 hours
notice —

To correct drop off gun
put Elec wire under entire
length of Cannon to bent
underside & Equal
bottom side —

Resin runs 15 to 16
free chemical use
add free p to Gray
to 22

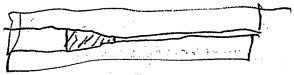
Switches in blowing room
put outside —

Hoffman too much
alcohol poison operator
Vac dryers —

Use NH4 Salts that Easily
decompose on heat & put in Vac
to heat & Oven they decomp
& give powder

Try passing ammonia
into charge till loaded
Various amounts
Try this

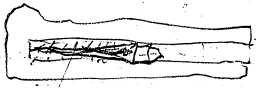
Thinks more 6/4 walls
take out wrinkles
Varnish



Deformation $6
Amalgam —
Zeppelins

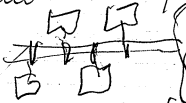
Bags for models
of aluminum cloth
dipped with graphite
Prevent Powder
Cannon

Fog spray in buildings
& leather shoes
leather bags —
no metal,



powder

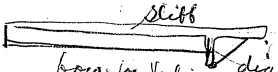
Submarine Engine



worm 4 @ 6 Engine 4 cy

Composite from dog
book of all submarines
Every detail that
has given trouble

Crank shafts made of many sheets bolted together or unbrazed with rings & all bored together —
This idea carried in all parts makes break Govt Subm & Aerop Engines —



K 53

219

200

51

50 65

7.5

2.5 2.5

3 5.3 5

73

3

219

516 | 520 | 10,7

516

4

1350
1375
800
3525
2900
625

275
5
1375

150
5
750

1800
12

Woodward
Cambria –
Mil
Sydney

950
450
1000
500
2900

Absorption Hydrogen
Persulfuric acid
Palladium or Pd Chloride
Charcoal
Tellurium
Platinum + Chloride
Cold water
Crookes says K ferri absorbs H
K Permang Easy Cold
Nitric Oxide — Plat black increases absorption greatly in liquids that absorb H

JA Wanklyn + JW Cooper Phil Mag [5] 30 431-430 H not absorbed by $FeCl_3$ $PtCl$ ferri K HNO_3 1.42 with or with strong H_2SO_4 Chromic acid K Permang solution however either acid or Alkaline is attacked at ordinary Temp forms a brown precipitate

FC Phillips Amer Chem J 16-255-7 long paper - gives lists of reducing H PdCl - slow but complete in Cold or at 100 c

$PtCl_4$ Very slow but complete in Cold or 100.
Ammoniacal Nitrate Silver slowly reduced to Silver
K Permang slowly in acid or alk
AgO reduced at 100 C.

Water absorbs 2.98 O
Hydrogen 1.93
Carbonic Oxide 2.41

On H passes thru red hot Fe Tubes

H is absorbed Palladium 505 Times Vol
Pt 49
Ni 17
Co 49 to 153

Victor Meyer (Ber 1897-1905-1940
Absorption of H by Permanganate Very
Req - get residue —

Strong H_2SO_4 at Ord temp absorbs H
$H+O$ Combine slowly when passed
thru an Ozone tube without Explosion
May be distilled —

Victor Meyer Ber 1896 29 2549-60
H gas left over Alkaline or Neutral
Sol of $KMnO_4$ gas is slowly
absorbed in Vol with Acid
is absorbed — In acid sol it is
absorbed + O is given off

Red hot platinum + Vac.
H is sucked thru only

Nitrate Silver at 80C absorbs
Hydrogen

Anhydrous Palladium according to
T C Phillips Amer Chem Soc Jnl
1895 17 - 801-9 absorbs
traces of H from the air while Cold
reduces the Salt given H_2S odour
Can be detected by Nitrate Silver

July 22 1905

Rammelhoff 4000 lbs clay
produce 2/1000.
for air cooled (100 lengths)
1 lb for increased production
above 4000 lbs. 1/4 of
reduction below 2/0

Chesterton – life Dickens
Orthodoxy Heretics –
G. B. Shaw –

shoulder aluminum dome

#57 recorder 1/2/1000 just proper shallow
downwards edge / 10 ft funnel
Piano 10 ft slit 6" wide 1½ to bottom of
piano opens – nearly if not quite
loud enough for recorder – Jumbo
perfect –
Voice 2 ft from funnel loud enough
10 feet 1/2 to 3/4 loud or pleasing
loud enough for recorder –
Faintly audible – Point blank at
2 ft Evidently loud singing on the
10 ft Column and in funnel
slope it – 10 ft funnel is only
less than 1/2 total shallowness
No echoes – Only a column
small shallowness –
Room entirely padded 9 wide
12 ft long 7½ high –
Conceiving 6 people easy + 6 musicians
if higher more musicians –

1st — Unloading

3 pm started — Unloaded
at 309 stopped to fix a blow
hole started again at
330 unloading —
all out 3.45 —
Total 25 min all out
started to fix ready to
Charge at 345,
start tightening up 358.
307 Running

1 Hour practically
Charge done in 40 min
or 20 min less —

1 Fusion in 2 hours
as far as filtering is
Concerned —

18
20
36

42
4
168

630 grades
115 Blueprints

Who is the Witness
Expert for Columbia

152.72
8.85
Wadsworth
7636
122176
1229.396

70
35
35
7000
245.00

1550
1229+
321
Ahy